IN THE CLAIMS

1. (Currently Amended) A data backup and recovery system for use with at least one server interconnected with at least one storage device, said data backup and recovery system comprising:

at least one data recovery device;

at least one data recovery storage device comprising a permanent storage component associated with and controlled by said at least one data recovery device; and

at least one data communication monitor for providing to said at least one data recovery device at least control information bearing an order stamp including an order mark and a time mark regarding data communications between corresponding ones of said at least one server and said at least one storage device,

said at least one data recovery device being responsive to at least said control information bearing an order stamp for storing data on said permanent storage component of said at least one data recovery storage device in a manner which enables reconstruction of a complete sequence of data communications for each of said at least one data communication monitor and enables reconstruction of a representation of said data communications at a given earlier time but does not require that the data be sent to said at least one data recovery device in a given order and stored on said permanent storage component of said at least one data recovery storage device in a given order before re-ordering the data.

2. (Previously Presented) A data backup and recovery system according to claim 1 and wherein at least one of said at least one data communication monitor is located other than at said at least one storage device.

3. (Previously Presented) A data backup and recovery system according to claim 1 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

4. (Previously Presented) A data backup and recovery system according to claim 2 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

5. (Original) A data backup and recovery system according to claim 1 and wherein said at least one data recovery device is operative to receive said at least control information and to store data on said at least one data recovery storage device in parallel.

6. (Original) A data backup and recovery system according to claim 1 and wherein said data communications comprise data updates.

7. (Original) A data backup and recovery system according to claim 1 and wherein said reconstruction of a representation of said data communications at a given earlier time guarantees that if the order stamp of a first update is smaller than the order stamp of a second update, the

second update is not stored on said at least one data recovery storage device unless the first update is stored on said at least one data recovery storage device.

8. (Previously Presented) A data backup and recovery system according to claim 1 and wherein individual ones of said at least one data communication monitor are associated with individual ones of said at least one server.

9. (Previously Presented) A data backup and recovery system according to claim 1 and wherein said at least one data communication monitor is associated with network elements of a storage area network.

10. (Previously Presented) A data backup and recovery system according to claim 1 and wherein at least one of said control information and said data communications is communicated from said at least one data communication monitor to said at least one data recovery device via a network.

11. (Original) A data backup and recovery system according to claim 10 and wherein said network is a private network.

12. (Original) A data backup and recovery system according to claim 10 and wherein said network is a public network.

13. (Previously Presented) A data backup and recovery system according to claim 1 and wherein at least one of said control information and said data communications is communicated from said at least one data communication monitor to said at least one data recovery device via a storage area network.

14. (Previously Presented) A data backup and recovery system according to claim 1 and wherein said at least one data communication monitor provides at least part of said data communications to said at least one data recovery storage device other than via said at least one data recovery device.

15. (Previously Presented) A data backup and recovery system according to claim 1 and also comprising at least one LOG storage device wherein said at least one LOG storage device comprises at least control information bearing a time mark regarding data communications between corresponding ones of said at least one server and said at least one storage device via a storage area network.

16. (Previously Presented) A data backup and recovery system according to claim 15 and wherein said at least one data communication monitor also stores at least part of said data communications to said at least one LOG storage device.

17. (Previously Presented) A data backup and recovery system according to claim 16 and wherein

said data communications stored to said at least one LOG storage device comprise data updates sent by said at least one server to said at least one storage device.

18. (Previously Presented) A data backup and recovery system according to claim 17 having said at least one LOG storage device such that if either said control information or said data communications or both are prematurely erased from said at least one data recovery device due to a failure or other event, said at least one data recovery device restores either said control information or said data communications or both from said at least one LOG storage device.

19. (Previously Presented) A data backup and recovery system according to claim 18 and wherein said at least one data recovery device resumes its activities with said control information or said data communications or both restored from said at least one LOG storage device.

20. (Previously Presented) A data backup and recovery system according to claim 17 and wherein said at least one data recovery device retrieves said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

21. (Previously Presented) A data backup and recovery system according to claim 18 and wherein said at least part of said data communications is communicated from said at least one data communication monitor to said at least one LOG storage device via a network.

22. (Original) A data backup and recovery system according to claim 21 and wherein said network is a private network.

23. (Original) A data backup and recovery system according to claim 21 and wherein said network is a public network.

24. (Previously Presented) A data backup and recovery system according to claim 18 and wherein at least part of said data communications is communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

25. (Previously Presented) A data backup and recovery system according to claim 17 wherein said at least one data recovery device retrieves both said control information and said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

26. (Previously Presented) A data backup and recovery system according to claim 25 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via a network.

27. (Original) A data backup and recovery system according to claim 26 and wherein said network is a private network.

28. (Original) A data backup and recovery system according to claim 26 and wherein said network is a public network.

29. (Previously Presented) A data backup and recovery system according to claim 25 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

30. (Currently Amended) A data backup and recovery system for use with at least one server interconnected with at least one storage device, said data backup and recovery system comprising:

at least one data recovery device;

at least one data recovery storage device comprising a permanent storage component associated with and controlled by said at least one data recovery device; and

data communication monitors for providing to said at least one data recovery device at least control information bearing an order stamp including an order mark and a time mark regarding data communications between corresponding ones of said at least one server and said at least one storage device,

said at least one data recovery device being operative to receive said at least control information and to store data on said permanent storage component of said at least one data recovery storage device in parallel and not requiring that the data be received by said at least one data recovery device in a given order before re-ordering the data.

31. (Previously Presented) A data backup and recovery system according to claim 30 and wherein at least one of said at least one data communication monitor is located other than at said at least one storage device.

32. (Previously Presented) A data backup and recovery system according to claim 30 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

33. (Previously Presented) A data backup and recovery system according to claim 31 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

34. (Original) A data backup and recovery system according to claim 30 and wherein said at least one data recovery device is operative to receive said at least control information and to store data on said at least one data recovery storage device in parallel.

35. (Original) A data backup and recovery system according to claim 30 and wherein said data communications comprise data updates.

36. (Original) A data backup and recovery system according to claim 30 and wherein said reconstruction of a representation of said data communications at a given earlier time guarantees that if the order stamp of a first update is smaller than the order stamp of a second update, the

second update is not stored on said at least one data recovery storage device unless the first update is stored on said at least one data recovery storage device.

37. (Previously Presented) A data backup and recovery system according to claim 30 and wherein individual ones of said at least one data communication monitor are associated with individual ones of said at least one server.

38. (Previously Presented) A data backup and recovery system according to claim 30 and wherein said at least one data communication monitor is associated with network elements of a storage area network.

39. (Previously Presented) A data backup and recovery system according to claim 30 and wherein at least one of said control information and said data communications is communicated from said at least one data communication monitor to said at least one data recovery device via a network.

40. (Original) A data backup and recovery system according to claim 39 and wherein said network is a private network.

41. (Original) A data backup and recovery system according to claim 39 and wherein said network is a public network.

42. (Previously Presented) A data backup and recovery system according to claim 30 and wherein

at least one of said control information and said data communications is communicated from said at least one data communication monitor to said at least one data recovery device via a storage area network.

43. (Previously Presented) A data backup and recovery system according to claim 30 and wherein said at least one data communication monitor provides at least part of said data communications to said at least one data recovery storage device other than via said at least one data recovery device.

44. (Previously Presented) A data backup and recovery system according to claim 30 and also comprising at least one LOG storage device wherein said at least one LOG storage device comprises at least control information bearing a time mark regarding data communications between corresponding ones of said at least one server and said at least one storage device via a storage area network.

45. (Previously Presented) A data backup and recovery system according to claim 44 and wherein said at least one data communication monitor also stores at least part of said data communications to said at least one LOG storage device.

46. (Previously Presented) A data backup and recovery system according to claim 45 and wherein said data communications stored to said at least one LOG storage device comprise data updates sent by said at least one server to said at least one storage device.

47. (Previously Presented) A data backup and recovery system according to claim 44 having said at least one LOG storage device such that if either said control information or said data communications or both are prematurely erased from said at least one data recovery device due to a failure or other event, said at least one data recovery device restores either said control information or said data communications or both from said at least one LOG storage device.

48. (Previously Presented) A data backup and recovery system according to claim 47 and wherein said at least one data recovery device resumes its activities with said control information or said data communications or both restored from said at least one LOG storage device.

49. (Previously Presented) A data backup and recovery system according to claim 46 and wherein said at least one data recovery device retrieves said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

50. (Previously Presented) A data backup and recovery system according to claim 47 and wherein said at least part of said data communications is communicated from said at least one data communication monitor to said at least one LOG storage device via a network.

51. (Original) A data backup and recovery system according to claim 50 and wherein said network is a private network.

52. (Original) A data backup and recovery system according to claim 50 and wherein said network is a public network.

53. (Previously Presented) A data backup and recovery system according to claim 47 and wherein at least part of said data communications is communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

54. (Previously Presented) A data backup and recovery system according to claim 46 wherein said at least one data recovery device retrieves both said control information and said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

55. (Previously Presented) A data backup and recovery system according to claim 54 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via a network.

56. (Original) A data backup and recovery system according to claim 55 and wherein said network is a private network.

57. (Original) A data backup and recovery system according to claim 55 and wherein said network is a public network.

58. (Previously Presented) A data backup and recovery system according to claim 54 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

59. (Previously Presented) A data backup and recovery system according to claim 1 and wherein said reconstruction of a representation comprises sending said data communications from said at least one data recovery storage device to said at least one storage device.

60. (Previously Presented) A data backup and recovery system according to claim 1 and wherein said reconstruction of a representation comprises employing said at least one data backup and recovery system as at least one of said at least one server and said at least one storage device.

61. (Original) A data backup and recovery system according to claim 1 and wherein said at least one server and said at least one storage device are interconnected via a local area network (LAN).

62. (Original) A data backup and recovery system according to claim 1 and wherein said at least one server and said at least one storage device are interconnected via a storage area network (SAN).

63. (Original) A data backup and recovery system according to claim 1 and wherein said at least one storage device is a network attached storage (NAS) device.

64. (Original) A data backup and recovery system according to claim 61 and wherein said at least one data communication monitor monitors data communications between said at least one server and said at least one storage device over said LAN.

65. (Original) A data backup and recovery system according to claim 62 and wherein said at least one data communication monitor monitors data communications between said at least one server and said at least one storage device over said SAN.

66. (Original) A data backup and recovery system according to claim 1 and wherein said at least one server comprises said at least one data communication monitor.

67. (Original) A data backup and recovery system according to claim 1 and wherein said at least one storage device comprises said at least one data communication monitor.

68. (Original) A data backup and recovery system according to claim 62 and wherein said SAN comprises said at least one data communication monitor.

69. (Currently Amended) A method for data backup and recovery for use with at least one server interconnected with at least one storage device, the method comprising:

providing at least one data recovery device;

providing at least one data recovery storage device comprising a permanent storage component associated with and controlled by said at least one data recovery device; and

providing at least one data communication monitor operative to perform:

monitoring the data communication between said at least one server and said at least one storage device;

creating at least control information bearing an order stamp including an order mark and a time mark regarding said data communications between corresponding ones of said at least one server and said at least one storage device; and

sending said monitored data communications and said control information to said permanent storage component of said at least one data recovery device,

said at least one data recovery device responding to said at least said control information in a manner which enables reconstruction of a complete sequence of data communications for each of said at least one data communication monitor and enables reconstruction of a representation of said data communications at a given earlier time but not requiring that said sending said monitored data communications and said control information to said permanent storage component of said at least one data recovery device be in a given order and stored on said at least one data recovery storage device in a given order before re-ordering the data.

70. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein at least one of said at least one data communication monitor is provided other than at said at least one storage device.

71. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

72. (Previously Presented) A method for data backup and recovery according to claim 70 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

73. (Original) A method for data backup and recovery according to claim 69 and wherein said at least one data recovery device is operative to receive said at least control information and to store data on said at least one data recovery storage device in parallel.

74. (Original) A method for data backup and recovery according to claim 69 and wherein said data communications comprise data updates.

75. (Original) A method for data backup and recovery according to claim 69 and wherein said reconstruction of a representation of said data communications at a given earlier time guarantees that if the order stamp of a first update is smaller than the order stamp of a second update, the second update is not stored on said at least one data recovery storage device unless the first update is stored on said at least one data recovery storage device.

76. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein individual ones of said at least one data communication monitor are associated with individual ones of said at least one server.

77. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein said at least one data communication monitor is associated with network elements of a storage area network.

78. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein at least one of said control information and said data communications is communicated from said at least one data communication monitor to said at least one data recovery device via a network.

79. (Original) A method for data backup and recovery according to claim 78 and wherein said network is a private network.

80. (Original) A method for data backup and recovery according to claim 78 and wherein said network is a public network.

81. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein at least one of said control information and said data communications is communicated

from said at least one data communication monitor to said at least one data recovery device via a storage area network.

82. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein said at least one data communication monitor provides at least part of said data communications to said at least one data recovery storage device other than via said at least one data recovery device.

83. (Previously Presented) A method for data backup and recovery according to claim 69 and also comprising storing at least control information on at least one LOG storage device, said at least control information bearing a time mark regarding data communications between corresponding ones of said at least one server and said at least one storage device via a storage area network.

84. (Previously Presented) A method for data backup and recovery according to claim 83 and wherein said at least one data communication monitor also stores at least part of said data communications to said at least one LOG storage device.

85. (Previously Presented) A method for data backup and recovery according to claim 84 and wherein said data communications stored to said at least one LOG storage device comprise data updates sent by said at least one server to said at least one storage device.

86. (Previously Presented) A method for data backup and recovery according to claim 85 such that if either said control information or said data communications or both are prematurely erased from said at least one data recovery device due to a failure or other event, said at least one data recovery device restores either said control information or said data communications or both from said at least one LOG storage device.

87. (Previously Presented) A method for data backup and recovery according to claim 86 wherein said at least one data recovery device resumes its activities with said control information or said data communications or both restored from said at least one LOG storage device.

88. (Previously Presented) A method for data backup and recovery according to claim 85 wherein said at least one data recovery device retrieves said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

89. (Previously Presented) A method for data backup and recovery according to claim 86 and wherein said at least part of said data communications is communicated from said at least one data communication monitor to said at least one LOG storage device via a network.

90. (Original) A method for data backup and recovery according to claim 89 and wherein said network is a private network.

91. (Original) A method for data backup and recovery according to claim 89 and wherein said network is a public network.

92. (Previously Presented) A method for data backup and recovery according to claim 86 and wherein at least part of said data communications is communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

93. (Previously Presented) A method for data backup and recovery according to claim 85 wherein said at least one data recovery device retrieves both said control information and said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

94. (Previously Presented) A method for data backup and recovery according to claim 93 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via a network.

95. (Original) A method for data backup and recovery according to claim 94 and wherein said network is a private network.

96. (Original) A method for data backup and recovery according to claim 94 and wherein said network is a public network.

97. (Previously Presented) A method for data backup and recovery according to claim 93 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

98. (Currently Amended) A method for data backup and recovery for use with at least one server interconnected with at least one storage device, said method comprising:

providing at least one data recovery device;

providing at least one data recovery storage device comprising a permanent storage component associated with and controlled by said at least one data recovery device;

providing at least one data communication monitor operative to perform:

monitoring the data communication between said at least one server and said at least one storage device;

creating at least control information bearing an order stamp including an order mark and a time mark regarding said data communications between corresponding ones of said at least one server and said at least one storage device; and

sending said monitored data communications and said control information to said permanent storage component of said at least one data recovery device,

receiving said at least control information by said at least one data recovery device; and

storing said data on said permanent storage component of said at least one data recovery storage device in parallel and without requiring that the data be received by said

permanent storage component of said at least one data recovery storage device in a given order before re-ordering the data.

99. (Previously Presented) A method for data backup and recovery according to claim 98 and wherein at least one of said at least one data communication monitor is located other than at said at least one storage device.

100. (Previously Presented) A method for data backup and recovery according to claim 98 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

101. (Previously Presented) A method for data backup and recovery according to claim 99 and wherein said at least one data communication monitor also provides at least part of said data communications to said at least one data recovery device.

102. (Original) A method for data backup and recovery according to claim 98 and wherein said at least one data recovery device is operative to receive said at least control information and to store data on said at least one data recovery storage device in parallel.

103. (Original)A method for data backup and recovery according to claim 98 and wherein said data communications comprise data updates.

104. (Original)A method for data backup and recovery according to claim 98 and wherein said reconstruction of a representation of said data communications at a given earlier time guarantees that if the order stamp of a first update is smaller than the order stamp of a second update, the second update is not stored on said at least one data recovery storage device unless the first update is stored on said at least one data recovery storage device.

105. (Previously Presented) A method for data backup and recovery according to claim 99 and wherein individual ones of said at least one data communication monitor are associated with individual ones of said at least one server.

106. (Previously Presented) A method for data backup and recovery according to claim 98 and wherein said at least one data communication monitor is associated with network elements of a storage area network.

107. (Previously Presented) A method for data backup and recovery according to claim 98 and wherein at least one of said control information and said data communications is communicated from said at least one data communication monitor to said at least one data recovery device via a network.

108. (Original)A method for data backup and recovery according to claim 107 and wherein said network is a private network.

109. (Original)A method for data backup and recovery according to claim 107 and wherein said network is a public network.

110. (Previously Presented) A method for data backup and recovery according to claim 98 and wherein at least one of said control information and said data communications is communicated from said at least one data communication monitor to said at least one data recovery device via a storage area network.

111. (Previously Presented) A method for data backup and recovery according to claim 98 and wherein said at least one data communication monitor provides at least part of said data communications to said at least one data recovery storage device other than via said at least one data recovery device.

112. (Previously Presented) A method for data backup and recovery according to claim 98 and also comprising storing at least control information on at least one LOG storage device, said at least control information bearing a time mark regarding data communications between corresponding ones of said at least one server and said at least one storage device via a storage area network.

113. (Previously Presented) A method for data backup and recovery according to claim 112 and wherein said at least one data communication monitor also stores at least part of said data communications to said at least one LOG storage device.

114. (Previously Presented) A method for data backup and recovery according to claim 113 and wherein said data communications stored to said at least one LOG storage device comprise data updates sent by said at least one server to said at least one storage device.

115. (Previously Presented) A method for data backup and recovery according to claim 114 having said at least one LOG storage device such that if either said control information or said data communications or both are prematurely erased from said at least one data recovery device due to a failure or other event, said at least one data recovery device restores either said control information or said data communications or both from said at least one LOG storage device.

116. (Previously Presented) A method for data backup and recovery according to claim 115 wherein said at least one data recovery device resumes its activities with said control information or said data communications or both restored from said at least one LOG storage device.

117. (Previously Presented) A method for data backup and recovery according to claim 114 wherein said at least one data recovery device retrieves said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

118. (Previously Presented) A method for data backup and recovery according to claim 115 and wherein said at least part of said data communications is communicated from said at least one

data communication monitor to said at least one LOG storage device via a network.

119. (Original) A method for data backup and recovery according to claim 118 and wherein said network is a private network.

120. (Original) A method for data backup and recovery according to claim 118 and wherein said network is a public network.

121. (Previously Presented) A method for data backup and recovery according to claim 115 and wherein at least part of said data communications is communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

122. (Previously Presented) A method for data backup and recovery according to claim 114 wherein said at least one data recovery device retrieves both said control information and said at least part of said data communications from at least one LOG storage device for the purpose of storing said data to at least one data recovery storage device associated therewith in a time ordered manner.

123. (Previously Presented) A method for data backup and recovery according to claim 122 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via a network.

124. (Original) A method for data backup and recovery according to claim 123 and wherein said network is a private network.

125. (Original) A method for data backup and recovery according to claim 123 and wherein said network is a public network.

126. (Previously Presented) A method for data backup and recovery according to claim 122 and wherein both said control information and said at least part of said data communications are communicated from said at least one data communication monitor to said at least one LOG storage device via said storage area network.

127. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein said reconstruction of a representation comprises sending said data communications from said at least one data recovery storage device to said at least one storage device.

128. (Previously Presented) A method for data backup and recovery according to claim 69 and wherein said reconstruction of a representation comprises employing said at least one data backup and recovery system as at least one of said at least one server and said at least one storage device.

129. (Original) A method for data backup and recovery according to claim 69 and wherein said

at least one server and said at least one storage device are interconnected via a local area network (LAN).

130. (Original) A method for data backup and recovery according to claim 69 and wherein said at least one server and said at least one storage device are interconnected via a storage area network (SAN).

131. (Original) A method for data backup and recovery according to claim 69 and wherein said at least one storage device is a network attached storage (NAS) device.

132. (Original) A method for data backup and recovery according to claim 129 and wherein said at least one data communication monitor monitors data communications between said at least one server and said at least one storage device over said LAN.

133. (Original) A method for data backup and recovery according to claim 130 and wherein said at least one data communication monitor monitors data communications between said at least one server and said at least one storage device over said SAN.

134. (Original) A method for data backup and recovery according to claim 69 and wherein said at least one server comprises said at least one data communication monitor.

135. (Original) A method for data backup and recovery according to claim 69 and wherein said

at least one storage device comprises said at least one data communication monitor.

136. (Original) A method for data backup and recovery according to claim 130 and wherein said SAN comprises said at least one data communication monitor.